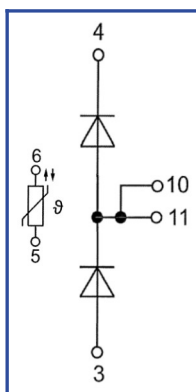
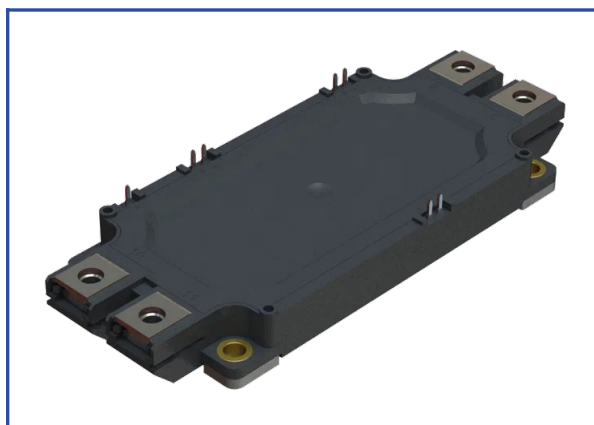


Low inductance half-bridge rectifier module with 17 mm height housing

1700 V 450 A



Chip features

- fast and soft reverse recovery
- low voltage drop

Design features

- copper baseplate
- Al₂O₃ DBC substrate
- ultrasonic welded power terminals
- improved thermal cycling
- RoHS compliant
- low inductance value

Typical application

- input rectifier for frequency converter
- power supplies

Maximum rated values

Definition	Symbol	Conditions	Value	Unit
Diode				
Repetitive peak reverse voltage	V_{RRM}		1700	V
Maximum allowable forward current (continuous)	I_{F25}	$T_{vj(max)} = 175^{\circ}C; T_c = 25^{\circ}C.$	526	A
	I_{F80}	$T_{vj(max)} = 175^{\circ}C; T_c = 80^{\circ}C.$	398	A
Repetitive peak forward current*1	I_{FRM}	$I_{FRM} = 3 \times I_{Fnom}; t_p = 1 \text{ ms.}$	1350	A
Junction operating temperature	$T_{vj(op)}$		-40...+150	°C
Module				
Storage temperature	T_{stg}		-40...+50	°C
Isolation voltage	V_{isol}	AC sin 50 Hz; t = 1 min.	4000	V

Characteristics

Definition	Symbol	Conditions	Value			Unit.	
			min.	typ.	max.		
Diode							
Forward voltage drop	V_F	$I_F = 450\text{ A};$ $t_u = 1000\text{ }\mu\text{s}.$	$T_{vj} = 25^{\circ}\text{C}$	1.80	2.20	2.60	V
			$T_{vj} = 150^{\circ}\text{C}$	2.20	2.65	3.10	V
Reverse recovery time	t_{rr}	$V_R = 920\text{ V};$ $I_{F\text{ max}} = 450\text{ A};$ $L_s = 56\text{ nH}.$	$T_{vj} = 25^{\circ}\text{C}$	218	273	328	ns
			$T_{vj} = 150^{\circ}\text{C}$	384	465	546	ns
$T_{vj} = 25^{\circ}\text{C}$	385		540	695	A		
	$T_{vj} = 150^{\circ}\text{C}$		315	445	575	A	
Recovered charge	Q_r		$T_{vj} = 25^{\circ}\text{C}$	64.5	85.5	106.5	μC
			$T_{vj} =$				

*1 Pulse width and repetition rate should be such that device junction temperature does not exceed maximum T_{vj} rating

Characteristics

Definition	Symbol	Conditions	Value			Unit.	
			min.	typ.	max.		
Diode							
Threshold voltage	$V_{(T0)}$	$T_{vj} = 150^{\circ}\text{C}; I_{F1} = 112\text{ A};$ $I_{F2} = 450\text{ A}; t_u = 1000\text{ }\mu\text{s}$	0.97	0.99	1.01	V	
Forward slope resistance	r_T		3.33	3.68	4.03	mΩ	
Thermal resistance junction to case	$R_{th(JC-D)}$	DC; $I_F = 300\pm 50\text{ A}; I_{test} = 1.5\text{ A}.$	-	0.088	0.091	K/W	
Module							
Pin resistance	R_{Pxy}	$T_{vj} = 25^{\circ}\text{C}.$	$R_{P10/11-3}$	-	0.92	1.00	mΩ
			$R_{P10/11-4}$	-	0.59	1.00	
Parasitic inductance between terminals	L_P		-	26.00	-	nH	
Thermistor resistance	R_t	$T_{vj} = 25^{\circ}\text{C}$	4850	-	6225	Ω	
		$T_{vj} = 100^{\circ}\text{C}$	475	-	554		
Coefficient of temperature sensitivity	$B_{25/50}$	$R_2 = R_{25} \exp [B_{25/50} (1/T_2 - 1/T_1)],$ $T_1 = 298,15\text{ K}$	-	3375	-	K	
Thermal resistance case to heatsink	R_{thCH}	per module	-	0.009	0.014	K/W	
Mounting torque for screws to heatsink	M_s	to heatsink M5	3	-	6	N*m	
Mounting torque for terminal screws	M_t	to terminals M6	3	-	6	N*m	
Weight	W		-	360	-	g	

" - " — data will be refined as additional tests are conducted and statistics are collected.

Notes:

- Insulating material operating temperature 125°C max;
- Case temperature 125°C max;
- The recommended operating junction temperature $T_{vj\text{ op}} = -40...+150^{\circ}\text{C}.$

Chart 11 – typ. output characteristic, FRD.

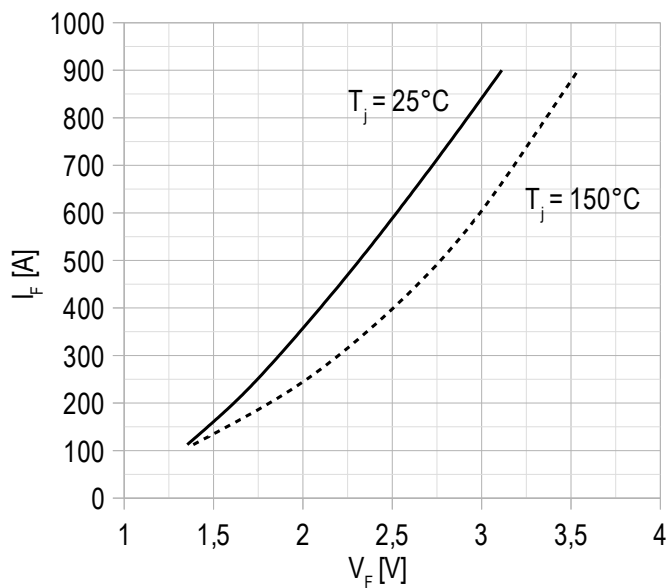

 $t_w = 1000 \mu\text{s}$.

Chart 2 – max. rated current vs temperature.

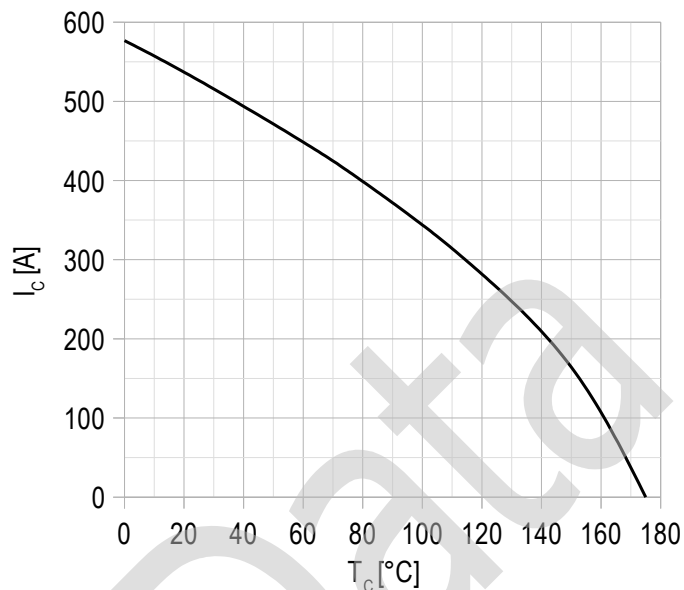
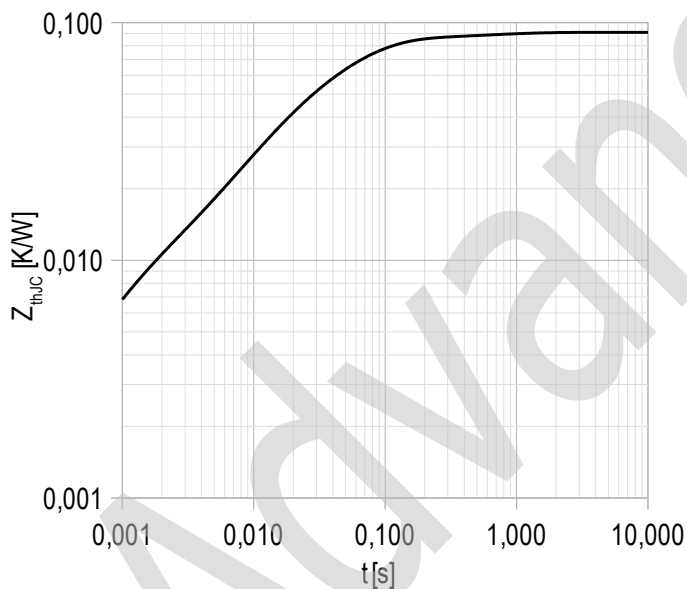
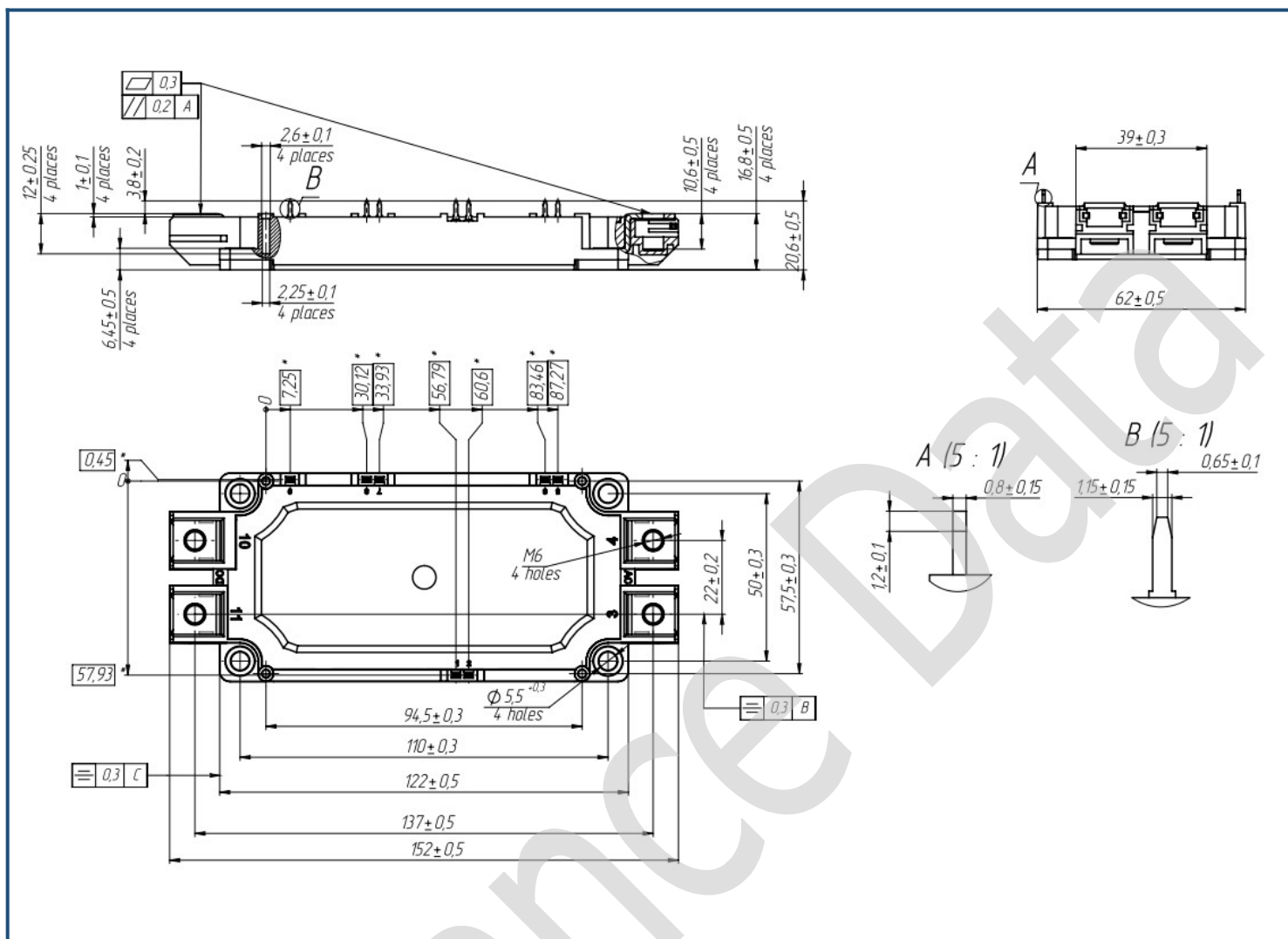

 DC;
 $T_{vj(max)} = 150^\circ\text{C}$.

Chart 3 – max. transient thermal impedance.



Single pulse.

Overall dimensions: Package type – DA

Part numbering guide

MDDA	-	DD	17	SG	-	450	N	
MDDA								Module package type: DA
		DD						Half-bridge connection of diodes
			17					Voltage rating ($V_{RRM}/100$)
				SG				FRD chipset modification
					450			Current Rating
						N		Climatic version: normal climate

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